

CLAIMS

1. A laser processing method for irradiating a substrate having a front face formed with a laminate part including a plurality of functional devices with laser light while locating a light-converging point within the substrate, so as to form a modified region to become a start point for cutting within the substrate along a line to cut the substrate;

the method comprising the steps of:

forming a first modified region along a first line to cut for cutting the substrate and laminate part into a plurality of blocks; and

forming a second modified region along a second line to cut for cutting the blocks into a plurality of chips, each chip including at least one of the functional devices;

wherein the first modified region is more likely to cause the substrate to fracture than is the second modified region.

2. A laser processing method according to claim 1, further comprising the steps of:

attaching an expandable film to a rear face of the substrate formed with the first and second modified regions; and

expanding the expandable film, so as to start cutting the substrate and laminate part into the blocks from the first modified region acting as a start point, and then start cutting the blocks into the chips from the second modified region acting as a start point.

3. A laser processing method according to claim 1 or 2, wherein the second line to cut passes between first lines to cut neighboring each other.

4. A laser processing method according to claim 1 or 2, wherein

the first and second lines to cut are substantially parallel to each other.

5. A laser processing method according to claim 1 or 2, wherein the first and second lines to cut intersect each other.

5 6. A laser processing method according to one of claims 1 to 5, wherein the substrate is a semiconductor substrate; and wherein the first and second modified regions include a molten processed region.

10 7. A laser processing method according to one of claims 1 to 6, wherein the first modified region in a part extending along the first line to cut in the substrate has a forming density different from that of the second modified region in a part extending along the second line to cut in the substrate, so as to make the first modified region easier to generate a fracture in the substrate than is the second modified region.

15 8. A laser processing method according to one of claims 1 to 7, wherein the first modified region in a part extending along the first line to cut in the substrate has a size different from that of the second modified region in a part extending along the second line to cut in the substrate, so as to make the first modified region easier to generate a fracture in the substrate than is the second modified region.

20 9. A laser processing method according to one of claims 1 to 8, wherein the first modified region in a part extending along the first line to cut in the substrate is formed at a position different from a position where the second modified region is formed in a part extending along the second line to cut in the substrate, so as to make the first modified region easier to generate a fracture in the substrate than is the second modified region.

25 10. An object to be processed comprising a substrate and a laminate

part, formed on a front face of the substrate, including a plurality of functional devices;

the object further comprising:

5 a first modified region formed within the substrate along a first line to cut for cutting the substrate and laminate into a plurality of blocks; and

a second modified region formed within the substrate along a second line to cut for cutting the blocks into a plurality of chips, each chip including at least one of the functional devices;

10 wherein the first modified region is more likely to cause the substrate to fracture than is the second modified region.